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Three Intensive Internet-Based Business Game Competitions in Thailand

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Abstract *Three intensive Internet-based business game competitions have been conducted in Thailand since 2014. The first two competitions spanned 19 hours split across two days; the third, 12 hours in one day. Between 48 and 110 participants took part in each competition. All three competitions involved GEO, a game that simulates economic life in a multinational economy populated by the participants themselves. Distinguishing attributes of the competitions were the life cycles of the participants (multiple vs. single), substantial number of periods involved (86 to 99 vs. 4 to 12), and the nature of the exercise (computer assisted vs. computer controlled). The computer server for the competitions was located in Thailand. The competitive event can be expanded to include participants from outside Thailand.*

Keywords: business game, competition, computer assisted, GEO

Introduction

Games used in education settings are often administered in a relaxed way. The game may not have a competitive element, and if it does, the prizes for winners have little to no monetary value. Participants are not expected to train for the game. Rather, they are expected to experience the game as a novel event, upon which they will subsequently reflect and learn, often assisted by debriefing.

The first intensive internet-based business gaming competition (IIBGC) that began in Thailand on 22 November 2014

and ended the following day was different. Scholarships and monetary prizes of notable value were awarded to winners. A player's manual and videos were supplied to participants, and training sessions were conducted in advance. Participants could practice with a demonstration version of the game weeks before the competition.

Two other IIBGCs have followed, as shown in Table 1. These three competitions may be the first IIBGCs anywhere, a notable achievement, considering that the competitions' primary sponsor, the Thai Simulation and Gaming Association (ThaiSim), was founded only six years earlier (Thavikulwat & Soranastaporn, 2015) and had not by the time of the first competition matured to the point of publishing its own journal. My purpose here is to summarize for the record the early history of the competitions, to explain their notable attributes, to classify the game that was used for the competitions, and to consider how the competitions might evolve to benefit more widely the people of Thailand, the ASEAN community of nations, and the world.

Table 1. Summary of Competitions

Date	Duration	No. of Periods	No. of Participants	No. of Companies	No. of Participants Above Baseline
November 22-23, 2014	19 hours	88	48	159	6
November 14-15, 2015	19 hours	99	110	354	9
February 25, 2017	12 hours	86	76	203	1

HISTORY

Besides ThaiSim, the competitions were also sponsored by e-LAT (Thailand E-learning Association). Southeast Bangkok College, Sripatum University at Chonburi, and Thonburi University made available scholarships for winners. Songsri Soranastaporn of Mahidol University was the lead organizer of the first and second competitions. Settachai Chaisanit of Sripatum University at

Chonburi was the lead organizer of the third competition. Anake Nammakhunt of Thonburi University managed the many technical issues of the first two competitions. Tipaporn Thavikulwat of GEO Global Technology authored most of the videos and manuals, and resolved many administrative issues.

As shown in Table 1, the first two competitions took place over 19 hours split across two days, from 9 a.m. to midnight of the first day and from 8 a.m. to noon of the second day. The third competition was shortened to 12 hours, 9 a.m. to 9 p.m., of one day. The game used for the competitions marks time in periods. Time between periods was generally 10 to 15 minutes for the first and second competitions, and 8 minutes for the third.

To serve as a baseline standard for acceptable performance, every competition included a ghost participant programmed to execute a fixed set of decisions for the duration of the event. As Table 1 shows, only about 6.8% of the participants performed above the baseline across the three competitions.

The fact that over 90% of the participants did not perform above the baseline can be explained by observing that the 234 participants across the three competitions founded 716 companies, averaging over 3.1 companies per participant. Inasmuch as the games simulates an economy where the goal is to maximize participants' consumption, this ratio of companies to participants meant that each company's revenue stream came from an average of only 0.33 participant, too few for the large majority of companies to be profitable. Many participants founded companies repeatedly, without optimizing the performance of the companies that they had previously founded. Each founded company required an investment for which the founder had to borrow money and pay interest. Without sufficient earnings from their companies to pay the interest on the money they borrowed, the interest payments reduced the income the participants could spend on consumption, which depressed their scores.

THE COMPETITIONS

The competitions were intensive because the 8-15 minutes duration between periods did not give participants enough time for reflection and learning. Knowledge, understanding, and skills had to be learned beforehand. Thus, the competition was more of an

assessment experience than a learning experience; more like an athletic competition, where training precedes the event, than a classroom activity where learning occurs during and after the event.

The competitions were Internet based rather than browser based (Pillutla, 2003), because the game's computer program interacts directly with the Windows operating system. As such, the computer program causes information to appear on the user's screen almost instantly on command. In contrast, web-based programs generally require participants to submit requests for information that are then made available for downloading. The immediate response of the game's computer program to participants' commands reduces the time participants must expend to get information, thus allowing them more time to use information.

Attributes

The simulation game of the competition was GEO, a non-commercial research vehicle developed for collegiate settings. GEO simulates economic life in a multinational economy populated by the participants themselves. The nations are assigned Greek-alphabet names (Alpha, Beta, and so forth) so that participants will not presume that any nation of the game will be representative of Thailand, Japan, or any other nation in everyday life. All participants were assigned to a single nation, assuring an identical starting position for everyone, but participants could be found companies and accept employment by the companies of any nation.

The economic life of each participant in the game is divided into life cycles, each of which begins when the participant submits bids for consumer products. The requirement to submit bids serves to impress on the participants the primacy of consumption to life and to assure that demand exists for the products of companies founded. Unlike many other business games, participants are not given a company to manage. Instead, each participant is given a periodic entitlement to consume the products of companies and a line of credit to finance the founding of companies. Thus, each participant chooses to find a company sooner, later, or never. Those who found companies pay interest on the money they borrow to finance their investments. Should their investments return less than the interest on the money they borrowed, they would have been better off not investing.

The goal of the participants is to extend the duration of each of their several life cycles by buying products, which the participants are presumed to consume. Participants who consume more and consume more evenly extend their lives more than other participants do. The number of periods each participant extends life through consumption is that participant's score in the game. The score is accumulated across the several life cycles. For the competitions, the duration of each life cycle was set at between 20 and 40 periods. A flow diagram showing how participant involvement gives rise to life extension is shown in Figure 1.

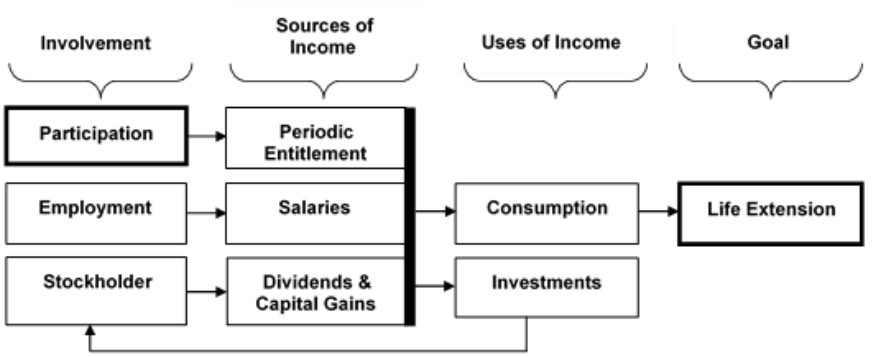


Figure 1. Performance Flow Diagram

As each life cycle approaches its end, the participant must decide when to transition to the next life cycle. For the competitions, the duration in which participants receive periodic entitlements was set at 15 periods. Thus, participants with no net positive wealth who do not earn salaries, dividends, and capital gains equal or exceeding their entitlements are better off transitioning to their next life cycle at the end of 15 periods, to avoid the reduction in consumption due to the loss of entitlements. Other participants should liquidate their wealth and transition when their liquidated wealth and remaining income does not suffice to enables them to consume at the level that they could consume with the periodic entitlements they would receive in their next life cycle.

For participants who do not select a transition period, the default action is that each life continues until it reaches its limit, after which the participant's life in the game terminates without transitioning to the next life cycle. The terminated participant can

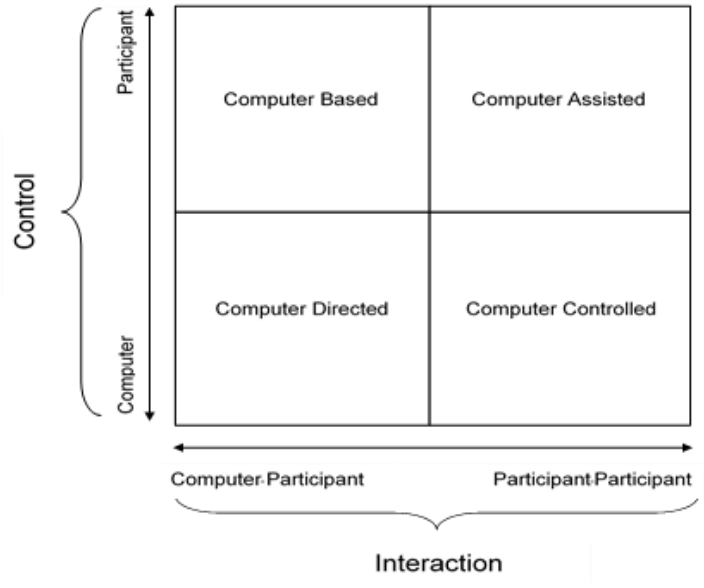
restart the participant's life by bidding anew for consumer products, but the interval between the termination of life and its restart are dead periods that contribute nothing to the participant's score. Thus, participants must be attentive to where they are in their life cycles to avoid dead periods and optimize their performance.

Typology

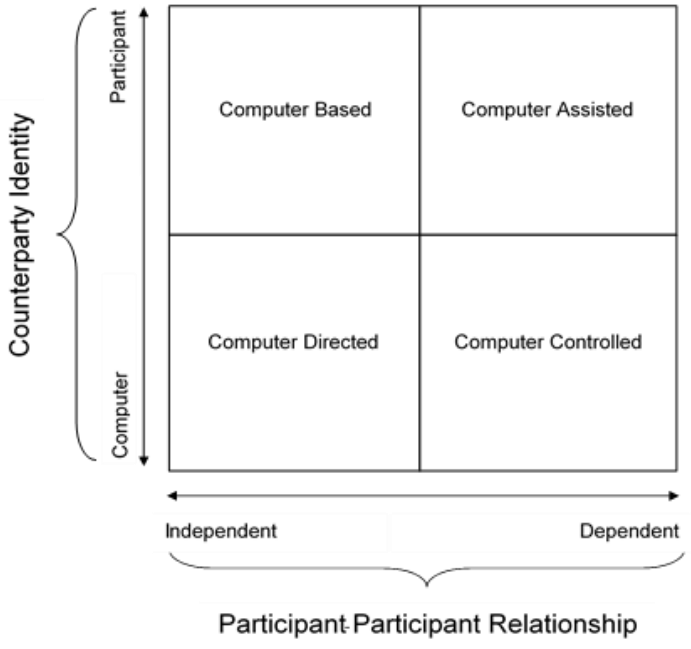
To classify GEO in a manner that advances understanding of its utility, I adapt Crookall, Martin, Saunders, and Coote's (1986) (CMSC) typology for computerized games. That typology relies on two dimensions, control and interaction, to classify computerized games into four types: computer directed, computer controlled, computer based, and computer assisted. By that typology, games controlled by the computer where interactions are predominately computer-participant are computer directed, whereas games likewise controlled but where interactions are predominately participant-participant are computer controlled. Games controlled by participants where interactions are predominately computer-participant are computer based, whereas games likewise controlled but where interactions are predominately participant-participant are computer assisted. The typology is illustrated in Figure 2a.

To classify GEO by the CMSC typology, two questions must be answered. First, is the interaction in the game primarily computer-participant or participant-participant? Second, is control of the game dominated by the computer or the participants?

The first question presumes that participant-participant interactions do not require computer mediation. The competitions, however, were administered over the Internet to participants throughout Thailand. The game itself supports text messaging, but participants also could use mobile phones, emails, and face-to-face talk to communicate with each other. Thus, depending on where the communicating participants were located, interactions could be participant-participant or participant-computer-computer-participant or both, with the mediating computers those of their mobile phones or of the computers the participants use to enter decisions and retrieve results.



(a)



(b)

Figure 2. Four Types of Computerized Games With (a) Original and (b) Changed Dimensions

The ambiguity of the first question is resolved if computer-participant interaction is replaced with participant-participant *independence* and participant-participant interaction is replaced with participant-participant *dependence*. Thus, a game wherein one participant's actions are not dependent on the actions of other participants is participant-participant independent; whereas a game administered such that what some do affects what others can do is participant-participant dependent. With this change, the competition is easily classified as participant-participant dependent.

The second question also cannot be answered easily with respect to the competitions, this time because *control* is ambiguous. Crookall et al. (1986) suggests that the relative salience of the computer in the game should decide the question of control, which does not resolve the issue because the term *salience* also is ambiguous. The ambiguity is resolved if control is replaced by counterparty identity.

The counterparty is the party to whom each participant must respond to earn a score in the game. The counterparty could be a competing party, but not necessarily so. In a business game, the competing party of a firm is another firm supplying an equivalently functional product to the same market. On the other hand, the counterparty is the customer who enters the market to buy the product. If the counterparty is an algorithm that mimics humans, such as Gold and Pray's classical model of product markets (Gold & Pray, 1983, 1984, 1990) and their variants (Cannon, Cannon, & Schwaiger, 2009; Cannon & Schwaiger, 2005; Gold & Pray, 2001; Goosen, 2009; Teach, 2007; Wolfe & Gold, 2007), the counterparty is the computer. Otherwise, counterparties are other participants.

In Figure 2b, computer control is replaced by computer-as-counterparty, and participant control is replaced by participant-as-counterparty. With this change, the competition is easily classified as participant-as-counterparty, because the game enables all products, shares, and employment services to be traded among participants and the companies founded and managed by the participants themselves.

The adapted typology, illustrated in Figure 2b, involves only the definitions of the dimensions. Names of the four types remain the same. Thus GEO, falling into the upper-right quadrant, is a computer-assisted game.

Although computerized business gaming competitions have been conducted since at least the early 1950s (Wolfe, 1993), they are usually computer-controlled competitions. In these competitions, participants are grouped into teams that compete with each other in the challenge of essentially outwitting each other and outsmarting the computer program that simulates markets. The participants may be told that the computer program truthfully reproduces the product, stock, and employment markets of the everyday word, but the talk is misleading. In truth, the gap between the intelligence of the algorithms and the intelligence of the humans they simulate is exceedingly large. As a consequence, the way for participants to win in the computer-controlled game is to forgo the suspension of reality that is asked and to accept the computer as it truly is, a device that executes algorithms.

Thus, the computer-controlled game incentivizes participants to enter the set of decisions that optimizes algorithmic outcomes given the likely decisions of competing teams. If an ancillary assignment that is scored by judges is associated with the game, such as a presentation to a supposed board of directors, and if the judges should base their scores on the participants' credible suspension of belief, then the participants are further incentivized to present fictionalized accounts of their work. As a consequence, the game then may become more of an appendage to indoctrination than an accompaniment to education.

Conversely, a game that is computer assisted is truthful by design. This type of game does not require participants to suspend reality nor to present fictionalized accounts of their work. More effort, however, must be invested in writing the supporting computer program, because the computer program must accept inputs from both the supply and the demand sides of the market. In recompense, computer-assisted games should "have greater scope and potential than other types when social and socially-mediated processes and skills are seen as important learning outcomes" (Crookall et al., 1986, p. 370).

Conclusion

Looking at the number of participants that have been involved in the three competitions, one could conclude that number of persons who benefited is small because only 234 persons

participated. If the competitions were well-established events, this conclusion would be reasonable.

The Thailand competitions, however, have been a pilot project in which a business game that advances rapidly over dozens of periods had not been previously attempted. Previous competitions using GEO were conducted over the 14 weeks of a college semester. Competitions using other business games generally conclude after only 4 to 12 periods (Anderson & Lawton, 1992; Rollier, 1992), much fewer than the 86 to 99 periods of the three competitions. Thus, the Thailand competitions have shown that an IIBCG is a viable innovation.

A crucial part of the competitions was a reliable computer server, which for the three competitions was located in Thailand. Thus, what also has been shown is that the expertise of Thais and the equipment in Thailand suffices. If anything is lacking, it may be the ability of Thais to imagine that Thais can innovate, not just for their country, but also for the world.

Given that imagination, the next steps are to regularize the competitions and raise the scale by attracting more participants. In the long term, IIBGCs administered in Thailand might attract participants from outside Thailand. If that stage arrives, the IIBGCs of Thailand will be one effort that advances the Thai economy to 4.0, where value is created by intellectual efforts.

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